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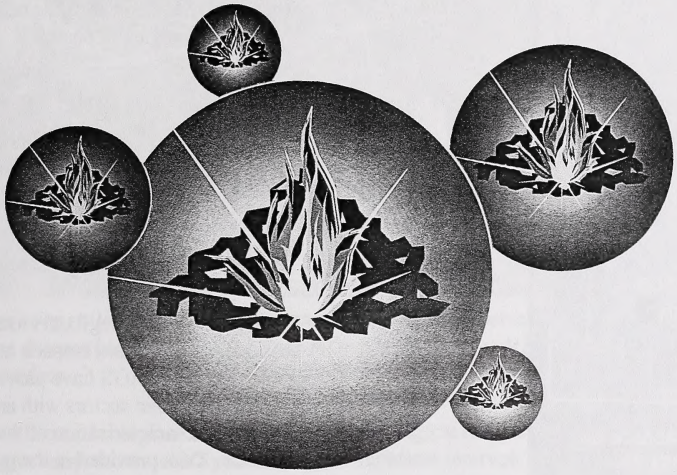
ROCK CHIPS

A Newsletter published by the Alberta Geological Survey for the geoscience community of Alberta.

Spring/summer 1991

CBM Phase II under development



The second phase of the Alberta Geological Survey's (AGS) coal bed methane (CBM) program is beginning to take shape. A coal bed methane research cooperative has been conceptualized and is targeted to be in place by the fall of 1991.

The cooperative would see the AGS spearhead a pre-competitive research program driven by client needs, with emphasis on issues identified by the private sector. Research direction, priorities and project scope will be set by a policy and program committee (PPC) comprised of representatives of organizations that subscribe to the cooperative. An annual subscription fee of $80K per member will be pooled and allocated to projects approved by the PPC.

"The next step in the AGS program is to address specific issues that industry is facing as it develops this relatively new resource", say Dennis Nikols, manager of the AGS coal bed methane program. "A research cooperative is an effective way to address industry-wide concerns without placing a financial burden on any one company or the government".

The cooperative concept also allows for research to be subcontracted to other organizations with capabilities that complement AGS expertise. Organizations such as members of the consulting community, universities and other geological surveys (federal or provincial) can be brought into projects where additional expertise is desired.

The focus of Phase II will reflect PPC input but research related to hydrogeological issues is certain to be high on the agenda. The volumes of water produced, the pressure and permeability distributions in coal beds, and environmental issues related to disposal are all important aspects of resource development.

"Coop.... effective way to address industry-wide concerns"

Other areas of investigation that have been identified through discussion with the private sector include applied research into the gas content of Alberta coals and log evaluation techniques specific to CBM applications.

Nikols summarizes, "We have added a great deal of experience to our group through Phase I of the CBM program and I am confident, with input from the private sector, we can spearhead a very effective program for Phase II."

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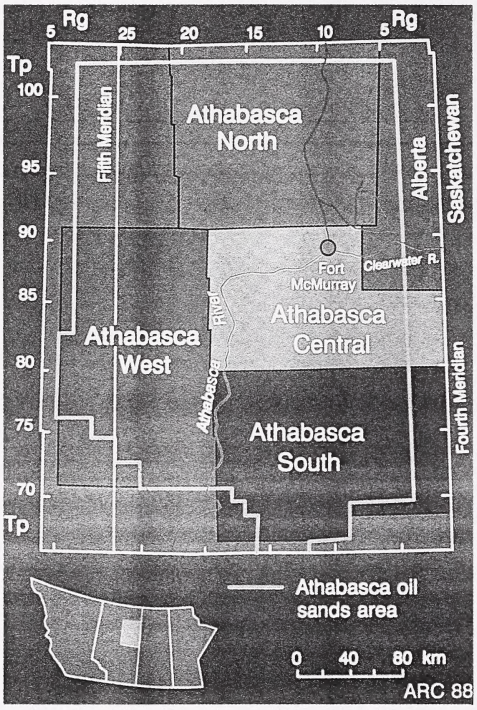
ALBERTA RESEARCH COUNCIL

70 Years of R&D
1921-1991

Expiring oil sands leases focus the need for regional data



The Alberta Geological Survey is systematically characterizing the vast Athabasca Oil Sands Area.

Why is early 1996 marked on the calendars of many oil companies with land holdings in the oil sands deposits? Because that is the period when these long term leases begin to expire. As a result, between now and 1996, many companies are likely to spend substantial amounts of time and resources on evaluating their properties in order to identify priority acreage.

Strategic to the evaluation of these resources will be an understanding of the regional framework and documentation of deposit specific characteristics. Efforts focussed on small to medium sized land holdings will rely on the bigger picture to provide a valuable perspective as companies evaluate the potential of their leases.

In response to this need the Alberta Geological Survey (AGS), with funding support from the Alberta Research Council (ARC), the Alberta Oil Sands Technology and Research Authority (AOSTRA), and the Alberta Department of Energy (AE), is working towards providing this important framework through the Oil Sands Geology Program.

The recent focus of the Program has resulted in the release of a report on the resource characterization of the Athabasca Oil Sands Area. AOSTRA Technical Series Report #7 documents a regional study of the stratigraphy, depositional facies and resource distribution of the oil sands in the McMurray/Wabiskaw stratigraphic interval over the central portion of this vast deposit.

"Strategic to evaluation ... will be an understanding of the regional framework..."

Through a series of regional cross sections, structure and isopach maps, geologists at the AGS have provided the private and public sectors with an impressive characterization of the resource. Data provided in the publication includes maps of bitumen, water and gas sand distribution, core descriptions and facies modelling for an area covering 198 square townships. This suite of data can be used to test interpretations developed over smaller areas.

As part of a long term commitment by the Program partners, the "resource characterization of the McMurray/Wabiskaw deposit in the Athabasca central region of northeastern Alberta" is only the first in a series, published and distributed by AOSTRA, which is intended to support the development of the resource. Consecutive reports on the north, south and western portions of the Athabasca area will follow beginning with the southern component expected this fall.

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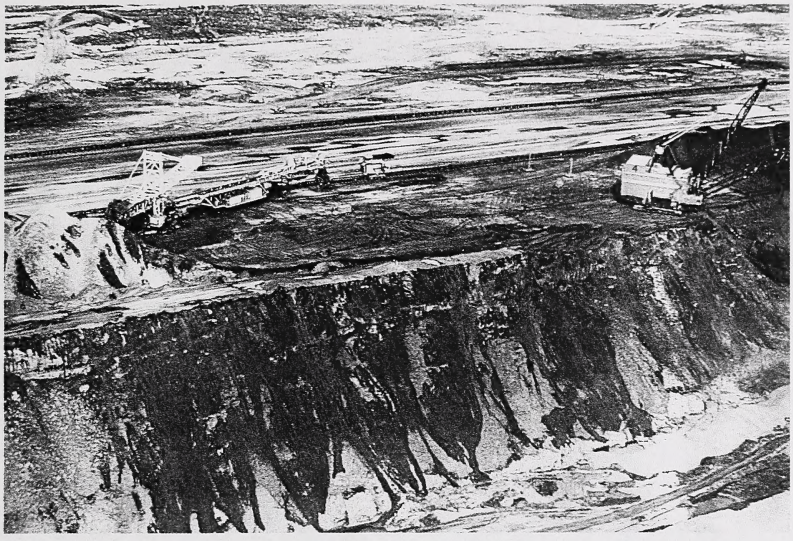
Syncrude data applied to the subsurface



Working cooperatively with Syncrude and AOSTRA, the Alberta Geological Survey is applying data gathered through the open pit mining process to McMurray reservoirs in the subsurface.

The Alberta Geological Survey is working in cooperation with Syncrude Canada Ltd. to undertake detailed reservoir characterizations in order to develop better simulation and production strategies for insitu bitumen recovery.

Geological models that more accurately represent reservoir geometries and heterogeneities are crucial to the success of insitu recovery processes. Many previous subsurface studies of the McMurray Formation have been regional in scope, and did not have access to the drill hole density required for geological modelling on a pilot scale. Syncrude Canada has provided the AGS with an opportunity to access the abundant drill hole and open pit mine data required for this type of study.

Core from closely spaced drill holes, dip meter logs and the results from highwall mapping are all being supplied for the purposes of this study. These data are providing researchers with the level of detail required to model the McMurray with a high degree of confidence. These models can then be applied to the subsurface to better understand the reservoir and plan more effective in situ recovery processes.

Predicted shortage of domestic oil reserves continue to make enhanced oil recovery and the McMurray oil sands reservoirs a priority at the AGS. The majority of Alberta's enormous oil sands reserves must be extracted by insitu methods and many technological and economical challenges remain.

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AGS tackles Jurassic/Cretaceous boundary problem

The Alberta Geological Survey has initiated a new project to delineate and map the strata straddling the Jurassic/Cretaceous boundary in west central Alberta.

The stratigraphy of the area is of particular interest to the Alberta Department of Energy, the Energy Resources Conservation Board and lease holders in the region for the purpose of establishing petroleum and natural gas rights. The complexity of the producing horizons specifically in the Gilby, Medicine River and Sylvan Lake fields has historically presented some challenges.

The AGS study will attempt to clearify the depositional history of the Jurassic/Cretaceous boundary strata and provide objective assessment of the degree to which the Jurassic/Cretaceous boundary issue could be resolved.

The project will produce regional and detailed cross sections, as well as maps for productive and prospective horizons in the area.

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Alberta Geological Survey

Research Forum '91

Calgary Convention Centre
Wednesday, November 27, 1991

Research Forum '91 will highlight AGS activities in the areas of conventional oil and gas, coal bed methane, oil sands, coal geology, and industrial and metallic mineral.

The full day program will feature both a poster and a technical session.

For more information please contact:
Mike Prentice 438-7619

Recent publications

Environmental Geology

- Hydrogeology of the Swan Hills Area, Alberta: Evaluation for deep waste injection. Bulletin 58, $15.
- Evaluation of effects of deep waste injection in the Cold Lake area, Alberta. Bulletin 60, $15.

Petroleum Geology and Basin Analysis

- The origin, history and regional structural development of the Peace River Arch, western Canada basin. Contribution series no. 2029, no charge.
- Hydrogeology, geopressures and hydrocarbon occurrences, Beaufort-Mackenzie basin. Contribution series no.1871, no charge.
- Tectonic loading in the Canadian cordillera as recorded by foreland basin sedimentation. Contribution series no. 2030, no charge.
- Hydrochemistry of the Peace River Arch area, Alberta and British Columbia. Open file report 1990-18, $10.

Coal Geology

- Regional coal maps (1:250 000) $85 for hardcopy or $20 on diskettes each:
  - Donald Flats; NTS 83E/16 Open file report 1991-7
  - Bolton Creek; NTS 83L/2 Open file report 1991-8
  - Copton Creek; NTS 83L/3 Open file report 1990-9
  - Praire Creek; NTS 83L/7 Open file report 1990-10
  - Cutbank River; NTS 83L/10 Open file 1991-11
- Coal bed methane in Alberta - what's it all about, seminar notes. Information series 108, $20
- Coal Geology and its application to coal bed methane reservoirs, Information series 109, $15.

Oil Sands Geology

- Resource characterization of the central region of the lower Cretaceous McMurray/Wabiskaw deposit, Athabasca oil sands area, northeastern Alberta. Contribution series no.1639, no charge.

Minerals

- An evaluation of the mineral potential in norteastern Alberta, Open file report 1991-6, $20.
- Placer gold occurrences in Alberta. Open file report 1990-9, $10.

Publications can be obtained from: Alberta Research Council, Publications Office, Box 8330, Station F, Edmonton, Alberta, T6H 5X2, Telephone: (403) 450-5390 , FAX: (403) 461-2651 (major credit cards accepted).